

Application No. 09/435,748

IN THE CLAIMS

Please substitute the following amended claims for those currently pending:

D4

29. (Twice Amended) A battery comprising:
a positive electrode;
a negative electrode; and
a separator between the positive electrode and the negative electrode,
wherein at least one of the electrodes has an average thickness less than about 10 microns and
comprises a powder, the powder comprising electroactive particles having an average primary
particle diameter less than about 500 nm.

30. The battery of claim 29 wherein the positive electrode has an average thickness less
than 10 microns and comprises electroactive particles having an average primary particle diameter
less than about 500 nm.

31. The battery of claim 29 wherein the negative electrode has an average thickness less
than 10 microns and comprises electroactive particles having an average primary particle diameter
less than about 500 nm.

32. The battery of claim 29 wherein both the negative electrode and the positive
electrode have an average thickness less than 10 microns and comprises electroactive particles
having an average primary particle diameter less than about 500 nm.

33. The battery of claim 29 wherein the separator has a thickness less than about 10
microns.

Application No. 09/435,748

34. The battery of claim 29 wherein the negative electrode comprises a lithium intercalation compound.

35. The battery of claim 29 wherein the negative electrode comprises lithium metal or a lithium alloy.

36. The battery of claim 29 wherein the negative electrode comprises tin oxide or derivatives thereof.

37. The battery of claim 29 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.

DS 38. (Amended) The battery of claim 29 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.

39. The battery of claim 29 wherein the separator comprises a polymer.

40. The battery of claim 29 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.

41. The battery of claim 29 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

Application No. 09/435,748

42. The battery of claim 41 wherein the current collector is a foil or an expanded mesh.
43. The battery of claim 29 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.
44. The battery of claim 29 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.
52. The battery of claim 29 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.
53. The battery of claim 29 wherein the electrodes comprise supplementary electrically conductive particles.
-
54. (Amended) The battery of claim 29 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.
-

(Please add new claims 58-77.)

58. (New) The battery of claim 29 wherein the at least one electrode further comprises a binder.

Application No. 09/435,748

59.

(New) A battery comprising:

a positive electrode;

a negative electrode; and

a separator between the positive electrode and the negative electrode,

wherein at least one of the electrodes has an average thickness less than about 10 microns and comprises a binder and electroactive particles having an average primary particle diameter less than about 500 nm.

60.

(New) The battery of claim 59 wherein the positive electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

61.

(New) The battery of claim 59 wherein the negative electrode has an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

62.

(New) The battery of claim 59 wherein both the negative electrode and the positive electrode have an average thickness less than 10 microns and comprises electroactive particles having an average primary particle diameter less than about 500 nm.

63.

(New) The battery of claim 59 wherein the separator has a thickness less than about 10 microns.

Application No. 09/435,748

64. (New) The battery of claim 59 wherein the negative electrode comprises a lithium intercalation compound.
65. (New) The battery of claim 59 wherein the negative electrode comprises lithium metal or a lithium alloy.
66. (New) The battery of claim 59 wherein the negative electrode comprises tin oxide or derivatives thereof.
67. (New) The battery of claim 59 wherein at least one of the electrodes comprises electroactive particles having an average diameter less than about 100 nm.
68. (New) The battery of claim 59 wherein the positive electrode comprises a composition selected from the group consisting of vanadium oxide, silver vanadium oxide, manganese oxide, lithium manganese oxide, lithium titanium oxide, lithium cobalt oxide, lithium nickel oxide, iron sulfides, molybdenum sulfide and mixtures, composites and derivatives thereof.
69. (New) The battery of claim 59 wherein the separator comprises a polymer.
70. (New) The battery of claim 59 wherein the separator comprises a nonliquid electrolyte comprising a lithium compound between the positive electrode and the negative electrode.

Application No. 09/435,748

71. (New) The battery of claim 59 further comprising a current collector in electrical contact with the positive electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

72. (New) The battery of claim 71 wherein the current collector is a foil or an expanded mesh.

73. (New) The battery of claim 59 further comprising a current collector in electrical contact with the negative electrode, the current collector comprising aluminum metal, copper metal or stainless steel metal.

74. (New) The battery of claim 59 further comprising a current collector comprising graphite paper, the current collector being in electrical contact with the positive electrode or the negative electrode.

75. (New) The battery of claim 59 wherein the surface of at least one of the electrodes at the separator has a root mean square surface roughness less than about 5 microns.

76. (New) The battery of claim 59 wherein the electrodes comprise supplementary electrically conductive particles.

77. (New) The battery of claim 59 wherein at least one electrode has effectively no electroactive particles with a diameter greater than about four times the average diameter of the collection of electroactive particles.